

WHAT IS CLAIMED IS:

1. An image forming apparatus in which a  
5 plurality of applications can be installed, the image  
forming apparatus comprising:

a use control part for receiving one or more  
authentication results from one or more authentication  
parts, and controlling use restriction for one or more  
10 applications according to the received one or more  
authentication results.

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2. The image forming apparatus as claimed in  
claim 1, wherein the use control part refers to  
information indicating one or more authentication parts  
that correspond to an application, causes the one or  
20 more authentication parts to perform authentication  
process when the application is used, and sends an  
authentication result to the application.

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3. The image forming apparatus as claimed in claim 1, wherein the use control part refers to information indicating one or more applications that correspond to an authentication part, and sends an authentication result of the authentication part to an application in the one or more applications when the application is used.

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4. The image forming apparatus as claimed in claim 1, wherein the use control part includes a part for controlling use restriction for a function of the application.

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5. The image forming apparatus as claimed in claim 1, wherein the use control part sends an authentication result indicating success of authentication to the one or more applications only when authentication by all of the one or more

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authentication parts succeeds.

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6. The image forming apparatus as claimed in claim 1, wherein the use restriction part sends an authentication result indicating success of authentication to the one or more applications when  
10 authentication by at least one authentication part in the one or more authentication parts succeeds.

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7. The image forming apparatus as claimed in claim 1, wherein each of the one or more authentication part is an application or an apparatus connected to the image forming apparatus.

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8. The image forming apparatus as claimed in  
25 claim 1, wherein the authentication part performs

authentication by using user authentication information  
input by a user and user authentication information  
registered beforehand.

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9. The image forming apparatus as claimed in  
claim 1, wherein the authentication part performs  
10 authentication by using billing information input by a  
user and available billing information registered  
beforehand.

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10. The image forming apparatus as claimed in  
claim 1, the image forming apparatus further comprising  
hardware resources used for image forming processes,  
20 and control services that perform processes of the  
system side including control of the hardware resources,

wherein the image forming apparatus is  
configured so as to be able to install a plurality of  
applications separately from the control services, and  
25 the image forming apparatus includes the use control

part as a control service.

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11. The image forming apparatus as claimed in claim 1, the authentication part comprising:

a user information input part for a user to input user identification information and user authentication information;

10 an external server communication part for sending the user identification information input by the user to an external server, and receiving user authentication information corresponding to the user identification information from the external server;

15 and  
a part for determining whether the user authentication information received from the external server is the same as the user authentication information input by the user, and sending a  
20 determination result to the use control part.

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12. The image forming apparatus as claimed in claim 1, the authentication part comprising:

a user information receiving part for receiving, from a client terminal, user identification  
5 information and first billing information indicating usage of the image forming apparatus by a user;

an external server communication part for sending the user identification information to an external server, and receiving second billing  
10 information corresponding to the user identification information from the external server;

a billing process part for comparing the first billing information received from the client terminal with the second billing information received  
15 from the external server, and sends a comparing result to the use control part.

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13. The image forming apparatus as claimed in claim 12, wherein the client terminal reads the user identification information and the first billing information from an external recording medium, and the  
25 user information receiving part receives the user

identification information and the first billing  
information from the client terminal.

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14. The image forming apparatus as claimed in  
claim 11, wherein the external server is a LDAP server  
on a network.

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15. A use control method for an application  
in an image forming apparatus in which a plurality of  
15 applications can be installed, the use control method  
comprising:

a use control step for receiving one or more  
authentication results from one or more authentication  
parts, and controlling use restriction for one or more  
20 applications according to the received one or more  
authentication results.

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16. The use control method as claimed in  
claim 15, wherein the image forming apparatus refers to  
information indicating one or more authentication parts  
that correspond to an application, causes the one or  
5 more authentication parts to perform authentication  
process when the application is used, and sends an  
authentication result to the application.

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17. The use control method as claimed in  
claim 15, wherein the image forming apparatus refers to  
information indicating one or more applications that  
15 correspond to an authentication part, and sends an  
authentication result of the authentication part to an  
application in the one or more applications when the  
application is used.

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18. The use control method as claimed in  
claim 15, wherein the image forming apparatus controls  
25 use restriction for a function of an application.



5           19. The use control method as claimed in  
claim 15, wherein the image forming apparatus sends an  
authentication result indicating success of  
authentication to the one or more applications only  
when authentication by all of the one or more  
10 authentication parts succeeds.

15           20. The use control method as claimed in  
claim 15, wherein the image forming apparatus sends an  
authentication result indicating success of  
authentication to the one or more applications when  
authentication by at least one authentication part in  
20 the one or more authentication parts succeeds.

25           21. The use control method as claimed in

claim 15, wherein each of the one or more authentication part is an application or an apparatus connected to the image forming apparatus.

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22. The use control method as claimed in claim 15, wherein the authentication part performs authentication by using user authentication information input by a user and user authentication information registered beforehand.

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23. The use control method as claimed in claim 15, wherein the authentication part performs authentication by using billing information input by a user and available billing information registered beforehand.

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24. The use control method as claimed in claim 15, the image forming apparatus further comprising hardware resources used for image forming processes, and control services that perform processes  
5 of the system side including control of the hardware resources,

wherein the image forming apparatus is configured so as to be able to install a plurality of applications separately from the control services, and  
10 the use control step is performed by a control service.

15 25. The use control method as claimed in claim 15, the authentication part comprising:

a user information input part for a user to input user identification information and user authentication information;

20 an external server communication part for sending the user identification information input by the user to an external server, and receiving user authentication information corresponding to the user identification information from the external server;

25 and

a part for determining whether the user authentication information received from the external server is the same as the user authentication information input by the user.

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26. The use control method as claimed in  
10 claim 15, the authentication part comprising:  
a user information receiving part for receiving, from a client terminal, user identification information and first billing information indicating usage of the image forming apparatus by a user;  
15 an external server communication part for sending the user identification information to an external server, and receiving second billing information corresponding to the user identification information from the external server;  
20 a billing process part for comparing the first billing information received from the client terminal with the second billing information received from the external server.

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27. The use control method as claimed in  
claim 26, wherein the client terminal reads the user  
5 identification information and the first billing  
information from an external recording medium, and the  
user information receiving part receives the user  
identification information and the first billing  
information from the client terminal.

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28. The use control method as claimed in  
15 claim 25, wherein the external server is a LDAP server  
on a network.

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29. An image forming apparatus in which a  
plurality of applications can be installed, the image  
forming apparatus comprising:  
a display part for displaying a screen, on an  
25 operation panel of the image forming apparatus, for

selecting one or more applications for an authentication part, in which user authentication by the authentication part is applied to use of the one or more applications; and

5           a use control part for receiving an authentication result from the authentication part, and controlling use restriction for the one or more applications according to the authentication result.

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30. The image forming apparatus as claimed in claim 29, wherein information input from the screen is  
15 stored in the image forming apparatus as information indicating the one or more applications corresponding to the authentication part.

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31. The image forming apparatus as claimed in claim 29, wherein the display part displays a screen  
for selecting one or more functions of an application  
25 to which user authentication by the authentication part

is applied.

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32. An image forming apparatus in which a plurality of applications can be installed, the image forming apparatus comprising:

10 a display part for displaying a screen, on an operation panel of the image forming apparatus, for selecting one or more authentication parts for an application, in which user authentication by the one or more authentication parts can be applied to use of the application; and

15 a use control part for receiving one or more authentication results from the one or more authentication parts, and controlling use restriction for the application according to the one or more authentication results.

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33. The image forming apparatus as claimed in  
25 claim 32, wherein information input from the screen is

stored in the image forming apparatus as information  
indicating the one or more authentication parts  
corresponding to the application.

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34. The image forming apparatus as claimed in  
claim 32, wherein the display part displays a screen  
10 for setting relationship among the one or more  
authentication parts.

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35. The image forming apparatus as claimed in  
claim 32, wherein the display part displays a screen  
for setting information indicating that user  
authentication for use of the application succeeds only  
20 if authentication by all of the one or more  
authentication parts succeeds.

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36. The image forming apparatus as claimed in claim 32, wherein the display part displays a screen for setting information indicating that user authentication for use of the application succeeds if  
5 authentication by at least one of the one or more authentication parts succeeds.

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37. The image forming apparatus as claimed in claim 29, wherein the authentication part performs authentication by using user authentication information input by a user and user authentication information  
15 registered beforehand.

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38. The image forming apparatus as claimed in claim 29, wherein the authentication part performs authentication by using billing information input by a user and available billing information registered beforehand.

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39. The image forming apparatus as claimed in  
5 claim 29, the image forming apparatus further  
comprising hardware resources used for image forming  
processes, and control services that perform processes  
of the system side including control of the hardware  
resources,  
10 wherein the image forming apparatus is  
configured so as to be able to install a plurality of  
applications separately from the control services, and  
the image forming apparatus includes the use control  
part and the display part as a control service.

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40. A use control method for an application  
20 in an image forming apparatus in which a plurality of  
applications can be installed, the use control method  
comprising:

a display step for displaying a screen, on an  
operation panel of the image forming apparatus, for  
25 selecting one or more applications for an

authentication part, in which user authentication by  
the authentication part is applied to use of the one or  
more applications; and

a use control step for receiving an  
5 authentication result from the authentication part, and  
controlling use restriction for the one or more  
applications according to the authentication result.

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41. The use control method as claimed in  
claim 40, wherein information input from the screen is  
stored in the image forming apparatus as information  
15 indicating the one or more applications corresponding  
to the authentication part.

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42. The use control method as claimed in  
claim 40, wherein the image forming apparatus displays  
a screen for selecting one or more functions of an  
application to which user authentication by the  
25 authentication part is applied.

5           43. A use control method for an application  
in an image forming apparatus in which a plurality of  
applications can be installed, the use control method  
comprising:

10           a display step for displaying a screen, on an  
operation panel of the image forming apparatus, for  
selecting one or more authentication parts for an  
application, in which user authentication by the one or  
more authentication parts can be applied to use of the  
application; and

15           a use control step for receiving one or more  
authentication results from the one or more  
authentication parts, and controlling use restriction  
for the application according to the one or more  
authentication results.

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44. The use control method as claimed in  
25 claim 43, wherein information input from the screen is

stored in the image forming apparatus as information  
indicating the one or more authentication parts  
corresponding to the application.

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45. The use control method as claimed in  
claim 43, wherein the image forming apparatus displays  
10 a screen for setting relationship among the one or more  
authentication parts.

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46. The use control method as claimed in  
claim 43, wherein the image forming apparatus displays  
a screen for setting information indicating that user  
authentication for use of the application succeeds only  
20 if authentication by all of the one or more  
authentication parts succeeds.

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47. The use control method as claimed in  
claim 43, wherein the image forming apparatus displays  
a screen for setting information indicating that user  
authentication for use of the application succeeds if  
5 authentication by at least one of the one or more  
authentication parts succeeds.

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48. The use control method as claimed in  
claim 40, wherein the authentication part performs  
authentication by using user authentication information  
input by a user and user authentication information  
15 registered beforehand.

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49. The use control method as claimed in  
claim 40, wherein the authentication part performs  
authentication by using billing information input by a  
user and available billing information registered  
beforehand.

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50. The use control method as claimed in  
5 claim 40, the image forming apparatus further  
comprising hardware resources used for image forming  
processes, and control services that perform processes  
of the system side including control of the hardware  
resources,  
10 wherein the image forming apparatus is  
configured so as to be able to install a plurality of  
applications separately from the control services, and  
the display step and the use control step are performed  
by a control service.

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